AF

Docket No.: 050059-0048

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of	:	Customer Number: 20277
Hideo SAMURA	:	Confirmation Number: 7482
Application No.: 09/343,092	:	Tech Center Art Unit: 2853
Filed: June 30, 1999	:	Examiner: Nguyen, Lam S.

For: HEAD FOR INK-JET PRINTER HAVING PIEZOELECTRIC ELEMENTS PROVIDED FOR EACH INK NOZZLE (AS AMENDED)

TRANSMITTAL OF SUBSTITUTE APPEAL BRIEF

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith is Appellant's Substitute Appeal Brief in support of the Notification of Non-Compliant Appeal Brief dated August 29, 2005.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due under 37 C.F.R. 1.17 and 41.20, and in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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This Substitute Appeal Brief is submitted in response to the Notification of Non-Compliant Appeal Brief dated August 29, 2005.

REAL PARTY IN INTEREST

The real party in interest is Canon Kabushiki Kaisha.

RELATED APPEALS AND INTERFERENCES

No other related appeals are currently pending.

STATUS OF CLAIMS

Claims 1, 4 through 7, 11 and 12 are pending in the application. Claim 12 stands under objection for depending from a rejected parent claim. Claim 12 otherwise stands allowable. Claims 1, 4 through 7 and 11 stand under rejection.

STATUS OF AMENDMENTS

No amendment has been filed subsequent to the final Office Action of January 24, 2005 (hereinafter referred to as "the Office Action").

SUMMARY OF CLAIMED SUBJECT MATTER

The claims relate to a head for ink-jet printer comprising a silicon substrate (1) on which a plurality of ink nozzles (5) and a plurality of ink passages (6) each communicating separately to each of the ink nozzles are processed finely using a plasma etching method (see, e.g., Figs. 1 and 2; page 7, lines 13-23; page 8, lines 23-24). An inorganic substrate (2) is joined with the silicon substrate and includes ink chambers (7), each communicating separately to each of the ink passages (6); (see, e.g., Figs. 1 and 2; page 7, line 24 to page 8, line 5). A piezoelectric element (4) of ferroelectric substance (8) is provided for changing separately a capacity of each of the ink chambers (7) to jet an ink from the ink nozzles (5) through the ink chambers (7); (see, e.g., page 7, lines 15-20 and page 8, lines 17-22). In accord with the invention, ink passages (6) are fine, as compared with the ink chambers (7), and ink nozzles (5) are fine, as compared with ink passages (6); (see, e.g., Fig. 1; page 8, lines 23-24; page 10, lines 22-24; page 13, lines 15-23).

Reference is made to the specification for a more detailed description of the present invention.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 4 through 7 and 11 have been rejected under 35 U. S. C. § 103(a) as being unpatentable over U.S. patent 4,680,595 (hereinafter "Cruz-Uribe") in view of U.S. patent 6,099,111 (hereinafter "Chang") and U.S. patent 5,530,465 (hereinafter "Hasegawa").

ARGUMENT

Claims 1, 4 through 7 and 11 have been rejected under 35 U. S. C. § 103(a) as being unpatentable over Cruz-Uribe in view of Chang and Hasegawa.

In the application of a rejection under 35 U.S.C. §103, it is incumbent upon the examiner to factually support a conclusion of obviousness. *In re Mayne,* 104 F.3d 1339, 41 USPQ2d 1451 (Fed. Cir. 1997*); In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). As stated in *Graham v. John Deere Co.* 383 U.S. 1, 13, 148 USPQ 459, 465 (1966), obviousness under 35 U.S.C. §103 must be determined by considering (1) the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims in issue; and (3) resolving the level of ordinary skill in the pertinent art. The PTO is thus charged with the initial burden of identifying a source in the applied prior art for: (1) claim features; and (2) the realistic requisite motivation for combining applied references to arrive at the claimed invention with a reasonable expectation of successfully achieving a specific benefit. *Smith Industries Medical Systems v. Vital Signs,* 183 F.3d 1347, 51 USPQ2d 1415 (Fed. Cir. 1999). A viable rejection thus must explain **why** one having ordinary skill in the art would have been realistically motivated to modify a particular reference in a particular manner to arrive at a particular claimed invention. *Ecolochem Inc. v. Southern California Edison, Co.*, 227 F.3d 361, 56 USPQ2d 1065 (Fed. Cir. 2000); *In re Rouffet*, 149 F.3d 1350, 47 USPQ2d 1453 (Fed. Cir. 1998). Such motivation, of course, regardless of its source, must be based upon "clear and particular" showings of

combinability in the prior art.

It is respectfully submitted that the record does not meet the requirements set forth in the above legal precedents for establishing a rejection under 35 U. S. C. § 103. The Office Action recognizes that Cruz-Uribe, the primary reference relied upon, does not disclose the following expressly claimed requirements: "said inorganic substrate has a common ink supply port for supplying ink to said plurality of ink passages at a portion on a surface of said inorganic substrate between a plurality of said piezoelectric elements (claim 1)", "ink nozzles have tapered configurations (claim 4)", "an ink tank for storing ink supplied to said ink chambers of said printer head (claim 7)", "said silicon substrate has a construction in which plural silicon substrates are laminated (claim 5)", and "said ink nozzles and said ink passages are communicated by laminating the silicon substrate in which said ink nozzles are processed and the silicon substrate in which said ink passages are processed (claim 6)". The Office Action has not addressed the express requirement in claim 1 that the substrate processed for ink nozzles and ink passages is a silicon substrate. Cruz-Uribe does not identify a silicon substrate.

In addressing the final limitation of claim 1, the Office Action concludes that it would have been obvious to modify the Cruz-Uribe by locating the common ink supply port between a plurality of piezoelectric elements, based on the teachings of Chang. The purported motivation for such modification is prevention of a crosstalk effect on ink droplet characteristics. Column 2, lines 28-31, of Chang have been relied upon for this conclusion. It is submitted, however, that Chang has no teaching that the position of a common ink supply port relative to piezoelectric elements plays any importance in achieving this asserted benefit. The cited portion of Chang attributes stabilization to the ink tank having a buffer function performed via an opening close to an ink flow path. The cited paragraph does relate the opening to the piezoelectric elements and does not teach that location of the ink supply port between piezoelectric elements provides better stabilization than location at other

regions close to the piezoelectric elements. It is submitted, therefore, that a person of ordinary skill in the art would not have been motivated to modify the Cruz-Uribe device as proposed in the Office Action from a consideration of the combined teachings of Cruz-Uribe and Chang.

It is further noted that column 6, lines 41-43, states that when the pressure generating chambers (i.e., piezoelectric elements) "are arranged on only one side of the communication path, the same effects can be attained." This passage teaches that the described improved stabilization benefit is not attained by virtue of placing an ink supply port between piezoelectric elements, in contrast with the rationale for modification propounded by the Office Action. As further evidence, the passage at column 6, lines 16-19, discusses achieving benefits even when piezoelectric elements are replaced with heating elements. A person of ordinary skill in the art, it is submitted, thus would assume from the Chang disclosure that the claimed location of the piezoelectric elements relative to the ink supply port is not relevant to the asserted benefits associated with Chang.

With respect to Hasegawa, the Office Action has relied upon this reference for disclosing an ink jet head provided with a plurality of nozzles and ink passages arranged in an array on laminated silicon substrates in which the ink nozzles and the ink passage are communicated and the plurality of nozzles and ink passages are formed by a plasma etching method. From this teaching, it was concluded that it would have been obvious to form the ink nozzles and passages of the Cruz-Uribe device in that manner. Hasegawa has not been relied upon for teaching modification of the Cruz-Uribe device to locate the ink supply port between a plurality of said piezoelectric elements. It is submitted that Hasegawa does not overcome the deficiency in the other prior art teachings with respect this claim requirement.

In summary, the teachings of all references, considered in combination, do not teach at least the requirement of the last limitation of claim 1.

CONCLUSION

It is submitted, therefore, that rejection of the sole independent claim 1 and its dependent claims 4 through 7 and 11 is untenable and should not be sustained. Reversal of the rejection of claims 1 and 4 through 7 and 11 is respectfully solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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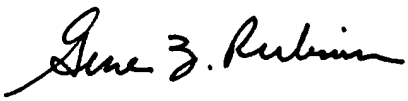

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CLAIMS APPENDIX

1. A head for ink-jet printer comprising:

a silicon substrate on which a plurality of ink nozzles and a plurality of ink passages each communicating separately to each of the ink nozzles are processed finely using a plasma etching method;

an inorganic substrate which is joined with said silicon substrate and is provided with ink chambers each communicating separately to each of the ink passages; and

a piezoelectric element of ferroelectric substance for changing separately a capacity of each of the ink chambers to jet an ink from said ink nozzles through said ink passages;

wherein said ink passages are fine as compared with said ink chambers and said ink nozzles are fine as compared with said ink passages, and

wherein said inorganic substrate has a common ink supply port for supplying ink to said plurality of ink passages at a portion on a surface of said inorganic substrate between a plurality of said piezoelectric elements.

4. The head for ink-jet printer according to claim 1, wherein said ink nozzles have tapered configurations.

5. The head for ink-jet printer according to claim 1, wherein said silicon substrate has a construction in which plural silicon substrates are laminated.

6. The head for ink-jet printer according to claim 5, wherein said ink nozzles and said ink passages are communicated by laminating the silicon substrate in which said ink nozzles are processed and the silicon substrate in which said ink passages are processed.

7. An ink-jet printer comprising:

a head for ink-jet printer as defined in claim 1; and

an ink tank for storing ink supplied to said ink chambers of said printer head.

11. A head for ink-jet printer according to claim 1, wherein said ink passages have a cross-sectional area less than a cross-sectional area of said ink chambers, and wherein said ink nozzles have a cross-sectional area less than a cross-sectional area of said ink passages.

12. A head for ink-jet printer according to claim 1, wherein a pitch of the ink nozzles is approximately 20 μm.

EVIDENCE APPENDIX

No evidence has been submitted of record under 37 CFR 1.130, 1.131 or 1.132.

RELATED PROCEEDINGS APPENDIX

No decisions have been rendered in related Appeals or Interferences.